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ABSTRACT

The study described in this paper involved 333 American students in Wisconsin and 375 Chinese students in Hong Kong in grades 8, 10, and 12. The study focused on 3 areas: (1) gender differences in perception of causal attributions of success or failure in school; (2) the relationship of gender to achievement goal orientation; and (3) cross-cultural differences in academic motivational orientations. Children completed English language questionnaires that gathered demographic information and assessed several factors related to children's academic motivational orientations. Results indicated that girls from both cultures felt the cause for their success in schoolwork as more internal and controllable, and were more likely to attribute their failure in schoolwork to lack of effort than were boys. These results suggested that both American and Chinese girls felt a stronger sense of personal responsibility for their academic achievement than their male counterparts. Compared to American boys, American girls were more likely to attribute their failure in schoolwork to the difficulty of the task, and scored higher on measures of task goals and social solidarity goals. (TJQ)

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Gender Differences in Academic Motivational Orientations: American and Chinese Students*

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Abstract

Cross-cultural gender differences in academic motivational orientations were examined with a sample of American (n=333) and Chinese (n=375) 8th-, 10th-, and 12th grade students. Subjects responded anonymously to a questionnaire measuring, among other things, causal attributions, dimensions of causal attributions, and achievement goal orientations. Results from factor analysis and stepwise multiple regression analysis showed a number of gender differences in these measures between students of these two cultures. In general, the findings suggest that girls of both cultures take more personal responsibility for their school achievement outcomes and that culture seems to mediate gender differences in academic motivational orientations.

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Gender Differences in Academic Motivational Orientations: American and Chinese Students

In research on gender differences in achievement causal attributions, the focus has been typically on specific causal attributions that are used to explain success and failure. For example, students were typically asked to identify the causes for their success or failure in an achievement task, and the findings generally show that girls are more likely to choose effort attributions whereas boys are more likely to choose ability and luck attributions (see, e.g., Ryckman & Peckham, 1987; Stipek, 1984). Few studies with school-age subjects, however, have focused on gender differences in the perception of causal attributions students indicated for their success or failure in schoolwork. It is important to study subjects' perception of causal attributions because the researcher and the subject may not always agree on the meaning of the subject's causal attributions. This is because such factors as the ambiguity of the attributional statement, individual differences, and situational variability may lead the researcher to misjudge the underlying properties of a given attribution (Russell, 1982). The perception of causal attributions subjects have indicated for their success or failure in a given achievement situation was studied by Russell (1982). The efforts of his work resulted in the development of the Causal Dimension Scale which assesses the perception of causal attributions of success and failure in terms of the

locus of causality, stability, and controllability dimensions described by Weiner (1979). This scale has been shown to have evidence of validity and reliability (e.g., Russell, McAuley, & Tarico, 1987). Since the perception of causal attributions is not identical to causal attributions (Russell, 1982), and since few, if any, studies with school-age subjects have focused on gender differences in the perception of causal attributions subjects have indicated for their success or failure in schoolwork, one purpose of this study was to explore gender differences in the perception of causal attributions students have indicated for their success or failure in schoolwork in terms of the locus of causality, stability, and controllability dimensions described by Weiner (1979). In addition, the usual causal attributions of success and failure in schoolwork were examined. Since previous studies have shown gender differences in causal attributions and since perceptions of causes of success and failure are one interrelated aspect of causal attributions, it was therefore hypothesized that there would be gender differences in the perception of causal attributions as well as in causal attributions of success and failure in school achievement.

Studies (e.g., Mazur, 1989; Travis, Burnett-Doering, & Reid, 1982) have shown that females tend to have stronger affiliative motives and affiliative values than males. Translated into the context of achievement motivation, this suggests that, in achievement situations, girls might have a

stronger socially oriented achievement goal orientation, or social solidarity goal, compared to boys. Social solidarity goal is characterized by a focus on interpersonal relations such as demonstrating good intentions, seeking social approval and so on. A person displays a social solidarity goal when the purpose of his or her engagement in a task is to seek social approval so as to establish and/or maintain good interpersonal relations (see, e.g., Maehr & Braskamp, 1986). Girls also are found to tend to outperform boys in schoolwork (see, e.g., Mussen, Conger, Kagan, & Huston, 1990; Sadker, Sadker, & Steindam, 1989; Lueptow, 1984). This gender difference in school performance suggests that girls, relative to boys, might have a stronger task goal, which is characterized by an emphasis on the task at hand, effort and improvement in one's work and so on (cf. Maehr, 1984; Maehr & Braskamp, 1986) since a strong task orientation is essential for successful school performance. A second purpose of this study was therefore to determine if gender was related to achievement goal orientations. It was hypothesized that gender would be related to achievement goal orientations such that girls would show a stronger task goal and social solidarity goal orientation than boys.

Because cross-national comparisons on academic achievement (see, e.g., McKnight, Crosswhite, Dossey, Kifer, Swafford, Travers, & Cooney, 1987; Stigler, Lee, & Stevenson, 1987; Stevenson, Stigler, Lee, Lucker, Kitamura, & Hsu, 1985) consistently showed Chinese students outperform

their American peers, and because researchers (e.g., Maehr & Nicholls, 1980) noted that one's cultural background is related to one's achievement motivations, a third purpose of this study was to examine, cross-culturally, gender differences in academic motivational orientations using a sample of American and Chinese students. Because cultural and sociocultural variables (e.g., ethnicity) have been noted to correlate with measures of achievement motivations (see, e.g., Maehr & Nicholls, 1980; Maehr & Braskamp, 1986), it was hypothesized that gender differences in students' academic motivational orientations would be different between students of these two cultures.

Method

Participants. Students from 8th-, 10th-, and 12th-grade classes in an urban area in eastern central Wisconsin and from the corresponding grades in Hong Kong were recruited for participation in the study. All participants were recruited from Roman Catholic schools because they tend to be a neglected population in research and also because studies (e.g., Coleman & Hoffer, 1987) showed that they tend to outperform their public school peers academically in the U.S. Students in these grade levels were recruited for two reasons. First, because they would be better able than younger students to handle the tasks at hand. The tasks were relatively sophisticated intellectually and were also entirely verbal, both of which demand the mastery of a minimum level of vocabulary and reading comprehension

skills. Second, because there is reason to believe that it was at the level of about grade seven children begin to exhibit an adultlike conception of ability (see, e.g., Nicholls & Miller, 1984).

The American sample consisted of 333 participants. They were distributed by grade and sex as follows: Grade 8: 54 boys and 53 girls; Grade 10: 56 boys and 51 girls; Grade 12: 60 boys and 59 girls. The age of these students ranged from 13 years 1 month to 19 years 0 month with a mean of 15 years 9 months. All these participants indicated their ethnicity to be white, non-Hispanic.

The Chinese sample consisted of 375 participants. They were distributed by grade and sex as follows: Grade 8 (Form 2): 69 boys and 68 girls; Grade 10 (form 4): 66 boys and 70 girls; Grade 12 (form 6): 53 boys and 49 girls. The age of these students ranged from 12 years 8 months to 20 years 0 month with a mean of 15 years 8 months.

The socioeconomic status (SES) of the students was measured in terms of the average of father's and mother's education (cf. Bjorklund & Weiss, 1985) using the following scale: 1=no schooling or some elementary school; 2=completed elementary school; 3=some secondary school; 4=completed secondary school; 5=some post-secondary education; 6=completed college or university. The mean and standard deviation of SES for the Chinese sample were 2.75 and 1.33, respectively, and those for the American sample were 5.02 and .81, respectively. It should be noted that the first

author consulted with local school authorities and was told that the mean and standard deviation reported here for the Chinese sample were realistic indicators of parental education for the Chinese students. Further, they noted that parental education was a reasonable index of the SES of students in Hong Kong.

Measures. Because the Chinese students in this study used English textbooks almost exclusively in their curriculum and had English as a medium of instruction in their schools, they were asked to respond anonymously to a questionnaire printed in English. The first part of the questionnaire asked students to provide demographic information (e.g., gender, age, father's and mother's education, ethnicity). The second part of the questionnaire asked students to respond to the dependent measures.

The dependent measures in this study were obtained from previous studies (Russell, 1982; Ames & Archer, 1987, 1988). They included measures of the following aspects of academic motivational orientations: causal dimensions of success and failure, causal attributions of success and failure, and achievement goal orientations.

Specifically, Causal dimensions for success and failure were measured by using the Causal Dimension Scale developed by Russell (1982). Attribution of success (failure) in school was measured by asking students to indicate how important each of four attributions was a reason for their success (failure) in school using a scale from 1 (not an

important reason) to 5 (an important reason). The four attributions were: (a) you have (don't have) ability; (b) you have worked very hard (didn't work hard enough);, (c) the work was easy (difficult); and (d) the teacher did a good (poor) job (cf. Ames & Archer, 1987, 1988). Achievement goal orientation was measured by asking students to indicate how satisfied they were using a scale from 1 (satisfied a little) to 5 (satisfied a lot) when they: (a) learn something new; (b) get a good grade; (c) understand how to do their homework; (d) do better than other students in their class; (e) find the work easy; (f) read something interesting; (g) work on a challenging project; (h) work hard; (i) see improvement in their work; (j) please the teacher; (k) please their parents; (l) get one of the highest grades; and (m) do well without having to work hard.

Procedure. The questionnaire was administered to the students in their classrooms by the first author, who was previously unknown to the students. They were told that there were no right or wrong answers in the questionnaire and the best answers would be those that honestly and accurately reflect their true thoughts and feelings. The students were debriefed about the purpose of the study after they all completed their questionnaires anonymously.

Results

The data for the American (n=333) and Chinese (n=375) samples were analyzed separately.

In the data analysis, stepwise multiple regression analysis was performed with the following predictor variables: gender, SES, self-perceived academic achievement, age, interaction between SES and self-perceived academic achievement, and interaction between gender and self-perceived academic achievement. Self-perceived academic achievement was defined in terms of students' responses to a question asking how they compared to other students in their grade level using a 7-point scale (1=one of lowest achievers; 7=one of highest achievers - cf. Ames & Archer, 1987, 1988).

The dependent variables in the analysis were students' responses to the causal attribution items and the scales that emerged from the factor analysis (with varimax rotation) of the items for the Causal Dimension Scale and the 13 items that measured achievement goal orientations.

The significant findings on gender differences for both the American and Chinese students are shown in Table 1.

Insert Table 1 about here

It should be noted that the intercorrelations among the measures shown in Table 1 for both the American and the Chinese group are generally very low. For the Americans, the five highest correlations are .40, .26, -.20, .18, and .16. For the Chinese, they are .41. .28, .26, .24, and .22. These

findings suggest that the measures are relatively independent measures in and of themselves.

As can be seen from Table 1, for American students, gender was found to be a significant predictor for the following two scales that measured the perception of causal attributions: a) perception of cause of success as internal and controllable (five items with a Cronbach's alpha of .70), and b) perception of cause of failure as internal (four items with a Cronbach's alpha of .60). Specifically, American girls were found to perceive the primary cause for their success in schoolwork to be more internal and controllable relative to boys. They also were found to perceive the primary cause for their failure in schoolwork to be more internal relative to boys.

With regard to causal attributions, American girls were also found to attribute their failure in schoolwork to lack of ability, lack of effort, and the difficulty of the task more than boys.

Also, as can be seen from Table 1, gender was found to be a significant predictor for American students for the following two scales that measured achievement goal orientations: a) task goal (six items with a Cronbach's alpha of .70), and b) social solidarity goal (three items with a Cronbach's alpha of .69). As noted previously, a task goal is characterized by an emphasis on the task at hand, effort and improvement in one's work and so on while a social solidarity goal emphasizes interpersonal relations

such as demonstrating good intentions, seeking social approval and so forth (see, e.g., Maehr, 1984; Maehr & Braskamp, 1986). Specifically, American girls were found to have a stronger task goal and social solidarity goal relative to boys.

For Chinese students (see Table 1), gender was found to be a significant predictor for the following scale that measured the perception of causal attributions: Perception of cause of success as internal and controllable (five items with a Cronbach's alpha of .60). Specifically, Chinese girls were found to perceive the primary cause for their success in schoolwork to be more internal and controllable relative to boys.

With regard to causal attributions, Chinese girls also were found to attribute their failure in schoolwork to lack of effort and to the poor job of the teacher more than boys. In addition, there was a gender by self-perceived academic achievement interaction for attributing failure to the difficulty of task and for attributing success to the ease of task. Specifically, an examination of the results showed that both male and female Chinese students of low self-perceived academic achievement ascribed more importance while students of other gender and self-perceived academic achievement combinations ascribed less importance to the difficulty of task as an important reason for their failure in schoolwork. Also, male Chinese students of middle and high self-perceived academic achievement and female students

of high self-perceived academic achievement tended to ascribe less importance than students of other gender and self-perceived academic achievement combinations to ease of task as an important reason for their success in school.

Also, as can be seen from Table 1, gender was found to be a significant predictor for Chinese students for the following scale that measured achievement goal orientations: Ego goal (three items with a Cronbach's alpha of .71), which is concerned with social competition such as surpassing the performance of others (see, e.g., Maehr, 1984; Maehr & Braskamp, 1986). Specifically, female Chinese students were found to have a stronger ego goal relative to males. In addition, there was a gender by self-perceived academic achievement interaction for the scale that measured social solidarity goal (three items with a Cronbach's alpha of .68). An examination of the results showed that female Chinese students who perceived themselves to have high academic achievement were found to be more socially oriented in their achievement goal orientation than those of other gender and self-perceived academic achievement combinations.

Discussion

Americans

The finding that American girls, relative to boys, tended to attribute their failure in schoolwork to lack of ability and lack of effort is consistent with the results from other studies (see, e.g., Dweck & Reppucci, 1973;

Nicholls, 1975; Ryckman & Peckham, 1987; Stipek & Gralinski, 1991).

In the present study, American girls, relative to boys, were found to perceive the cause for their success to be more internal and more controllable. They were also found to perceive the cause for their failure to be more internal. These findings seem to corroborate those from this and other studies noted earlier that girls tended to attribute failure to lack of ability and effort since ability and effort are both internal attributions. Together, they seem to provide corroborative evidence to suggest that girls, relative to boys, demonstrate a stronger sense of personal responsibility for school achievement outcomes.

An internal locus of control has been found in numerous studies to correlate positively with cognitive performance measures such as school grades and achievement test scores (see, e.g., Chapman & Skinner, 1989; Stipek & Weisz, 1981). Students who believe that outcomes occur as a result of their own actions or attributes are generally found to perform better than those who believe that their own actions or attributes have little influence on the outcomes. The greater sense of personal responsibility for academic achievement outcomes suggested by the present findings thus may help explain why American girls tend to outperform their male peers in schoolwork.

It should be noted that relative to boys, American girls were also found to be more likely to attribute their

failure in schoolwork to the difficulty of the task. This finding suggests that girls are by no means immune to assigning blames to others for their failures. The implication seems to be that it might be important to educate girls to try to set reasonable goals or set appropriate expectations for their performance on tasks assigned to them. If failure occurs after their best efforts, then they need to objectively determine the real cause(s) for their failure and not simply blame their failure on the difficulty of the task.

In the present study, American girls were also found to score higher on a measure of task goal and a measure of social solidarity goal relative to boys. As noted earlier, a task goal is characterized by an emphasis on the task at hand, effort and improvement in one's work and so forth while a social solidarity goal is characterized by an emphasis on interpersonal relations such as demonstrating good intentions, seeking social approval and so on. This finding seems to corroborate those reported by Maehr and Braskamp (1986), who found that adult females tended to score higher and adult males score lower on a task goal measure and also on an affiliation measure.

The finding that American girls, relative to boys, have a stronger social solidarity goal seems to reflect girls' stronger motive and value for social affiliation noted by researchers (see, e.g., Mazur, 1989; Travis, Burnett-Doering, & Reid, 1982). This stronger social solidarity goal

may very well serve as an additional incentive for girls to achieve, thereby helping them to perform better than boys in school. The finding that girls are more task-oriented relative to boys seems to show that girls are more adaptive in their achievement strivings because they tend to have a better focus on the task, which might be expected to contribute to their achievement outcomes. These findings, along with the finding that girls' perception of the cause of their success as more internal and controllable, their perception of the cause of their failure as more internal, and their greater tendency to attribute failure to lack of ability and effort together suggest the following: Girls' academic motivational orientation is one that puts greater emphasis on personal responsibility and social solidarity and is more adaptive compared to that of boys. And this may be one reason for their higher performance in schoolwork.

Chinese

Relative to boys, Chinese girls were found to perceive the cause for their success in schoolwork to be more internal and controllable. They also were found to be more likely to attribute their failure in schoolwork to lack of effort. These findings seem to suggest that, like their American peers, Chinese girls, relative to boys, have a stronger sense of personal responsibility for school achievement outcomes. It should be noted that relative to their male peers, Chinese girls were also found to be more likely to attribute their failure in schoolwork to the poor

job of the teacher. This finding suggests that Chinese girls, like their American peers, are by no means immune to assigning blames to others for their failures. The implication seems to be that while their greater sense of personal responsibility for academic achievement outcomes should be recognized, it is also important to caution them against their greater tendency to assign blames to others for their failures.

That Chinese girls were found to have a stronger ego goal relative to their male counterparts (again, as noted earlier, ego goal is concerned with social competition such as surpassing the performance of others) is an interesting one. A plausible explanation for this finding is that, given the value ascribed to education and achievement in the Chinese culture (see, e.g., Lin & Fu, 1990; Chen & Uttal, 1988), females may have internalized this value more than males and thus become more concerned with their performance in school in the form of social competition such as surpassing the performance of others than their male peers. It would be of interest to further examine this conjecture.

The interaction between gender and self-perceived academic achievement among Chinese students shows that the effects of gender on measures of academic motivational orientations tend to depend on students' self-perceived academic achievement. The implication of these findings is that when the gender of Chinese students are taken into consideration in an attempt to provide an optimal

environment for school learning, their self-perceived academic achievement level should also be taken into account. For example, as noted earlier, Chinese girls who perceived themselves to have high academic achievement were found to be more socially oriented in their achievement goal orientation than those of other gender and self-perceived academic achievement combinations. If a task orientation is considered to be more desirable than a social orientation in the sense that the former is "self-directed" while the latter is "other-directed", then this finding suggests that it is important for teachers and others to help Chinese girls with high self-perceived academic achievement to become more task-oriented rather than socially oriented in their achievement strivings.

Conclusion

That both American and Chinese girls were found to perceive the cause for their success as more internal and controllable and attributed their failure to lack of effort more than boys suggests that there is a stronger sense of personal responsibility for achievement outcomes in schoolwork on the part of girls in both cultures. This finding probably helps explain why girls tend to outperform boys in school. The educational implication of these findings is that it is important not only to applaud the stronger sense of personal responsibility for schoolwork in girls but, perhaps more importantly, also to educate boys to enhance their level of consciousness of this sense of

personal responsibility. In other words, it is important to help foster and reinforce the development of a sense of personal responsibility for achievement outcomes among boys in both cultures to enhance their academic performance.

The present finding that girls of both cultures tended to perceive success as more controllable and internal relative to boys seems to agree with that of Eccles, Adler and Meece (1984). In their study with students in grade 8 through 10 on their performance in math and English, these researchers found little support for the learned-helplessness pattern of attributions for achievement behavior for girls reported in the literature. The learned-helplessness pattern of attributions is characterized by attributing both success and failure to external and uncontrollable causes (see, e.g., Eccles, Adler, & Meece, 1984). As described, the present finding suggests that this is not the case for the present sample of American and Chinese students since a tendency was found for girls to perceive success as more controllable and internal relative to boys. Because the subjects in the study by Eccles, Adler, and Meece (1984) and the present study were of secondary school age (grade 8 and up) while the subjects in studies showing learned-helplessness patterns of attributions were of other age levels (see, e.g., Dweck & Reppucci, 1973; Nicholls, 1975; Stipek, 1984) and also because of differences in the tasks used, one might speculate that the learned-helplessness pattern of attributions may be a

function of both the age of subjects and the specific tasks at hand. Perhaps further research may be conducted to address this issue.

As can be seen from the above discussions and Table 1, a number of cross-cultural gender differences in academic motivational orientations were observed in the present study. In general, gender differences that were found among American students were typically not found among Chinese students (see Table 1). These cross-cultural gender differences in academic motivational orientations conceivably reflect the influences of cultural values and beliefs and they thus deserve further study.

References

Ames, C., & Archer, J. (1987). Mothers' beliefs about the role of ability and effort in school learning. Journal of Educational Psychology, 79, 409-414.

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Student learning strategies and motivation processes. Journal of Educational Psychology, 80, 260-267.

Bjorklund, D. F., & Weiss, S. C. (1985). Influence of socioeconomic status on children's classification and free recall. Journal of Educational Psychology, 77, 119-128.

Chapman, M., & Skinner, E. A. (1989). Children's agency beliefs, cognitive performance, and conceptions of

effort and ability: Individual and developmental differences. Child Development, 60, 1229-1238.

Chen, C., & Uttal, D. H. (1988). Cultural values, parents' beliefs, and children's achievement in the United States and China. Human Development, 31, 351-358.

Coleman, J. S., & Hoffer, T. (1987). Public and private high schools. New York: Basic Books.

Dweck, C. S., & Reppucci, N. D. (1973). Learned helplessness and reinforcement responsibility in children. Journal of Personality and Social Psychology, 25, 109-116.

Eccles, J., Adler, T., & Meece, J. L. (1984). Sex differences in achievement: A test of alternate theories. Journal of Personality and Social Psychology, 46, 26-43.

Lin, C. C. Y., & Fu, V. R. (1990). A comparison of child-rearing practices among Chinese, Immigrant Chinese, and Caucasian-American parents. Child Development, 61, 429-433.

Lueptow, L. (1984). Adolescent sex roles and social change. New York: Columbia University Press.

Maehr, M. L. (1984). Meaning and motivation: Toward a theory of personal investment. In R. Ames & C. Ames (Eds.), Research on motivation in education: Student motivation (pp. 115-144). New York: Academic Press.

Maehr, M. L., & Braskamp, L. A. (1986). The motivation factor: A theory of personal investment. Lexington, MA: D. C. Heath.

Maehr, M. L., & Nicholls, J. G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), Studies in cross-cultural psychology (Vol. 3, pp. 221-267). New York: Academic Press.

Mazur, E. (1989). Predicting gender differences in same-sex friendships from affiliation motive and value. Psychology of Women Quarterly, 13, 277-291.

McKnight, C. C., Crosswhite, F. J., Dossey, J. A., Kifer, E., Swafford, J. O., Travers, K. J., & Cooney, T. J. (1987). The underachieving curriculum: Assessing U.S. school mathematics from an international perspective. Champaign, IL: Stipes.

Mussen, P. H., Conger, J. J., & Kagan, J. (1990). Child development and personality (7th ed.). New York: Harper & Row.

Nicholls, J. G. (1975). Causal attributions and other achievement-related cognitions: Effects of task outcome, attainment value, and sex. Journal of Personality and Social Psychology, 31, 379-389.

Nicholls, J. G., & Miller, A. (1984). Development and its discontents: The differentiation of the concept of ability. In J. G. Nicholls (Ed.), The development of achievement motivation (pp. 185-218). Greenwich, CT: JAI Press.

Russell, D. (1982). The Causal Dimension Scale: A measure of how individuals perceive causes. Journal of Personality and Social Psychology, 42, 1137-1145.

Russell, D. W., McAuley, E., & Tarico, V. (1987). Measuring causal attributions for success and failure: A comparison of methodologies for assessing causal dimensions. Journal of Personality and Social Psychology, 52, 1248-1257.

Ryckman, D. B., & Peckham, P. (1987). Gender differences in attributions for success and failure situations across subject areas. Journal of Educational Research, 81, 120-125.

Sadker, M., Sadker, D., & Steindam, S. (1989). Gender equity and educational reform. Educational Leadership, 46 (6), 44-47.

Stevenson, H. W., Stigler, J. W., Lee, S. Y., Lucker, G. W., Kitamura, S., & Hsu, C. C. (1985). Cognitive performance and academic achievement of Japanese, Chinese, and American children. Child Development, 56, 718-734.

Stigler, J. W., Lee, S. Y., & Stevenson, H. W. (1987). Mathematics classrooms in Japan, Taiwan, and the United States. Child Development, 58, 1272-1285.

Stipek, D. J. (1984). Sex differences in children's attributions for success and failure on math and spelling tasks. Sex Roles, 11, 969-981.

Stipek, D. J., & Gralinski, J. H. (1991). Gender differences in children's achievement-related beliefs and emotional responses to success and failure in mathematics. Journal of Educational Psychology, 83, 361-371.

Stipek, D. J., & Weisz, J. R. (1981). Perceived personal control and academic achievement. Review of Educational Research, 51, 101-137.

Travis, C. B., Burnett-Doering, J., & Reid, P. T. (1982). The impact of sex, achievement domain, and conceptual orientation on causal attributions. Sex Roles, 8, 443-454.

Weiner, B. (1979). A theory of motivation for some classroom experiences. Journal of Educational Psychology, 71, 3-25.

Table 1

Summary of Multiple Regression Analysis: Effects of Gender on Academic Motivational Orientations

Measure	American[a]	Chinese[a]
Dimension of Causal Attribution		
Perception of cause of success as internal and controllable	-.14**	-.14**
Perception of cause of failure as internal	-.14**	-----
Causal Attribution		
Attributing failure to lack of ability	-.12*	-----
Attributing failure to lack of effort	-.11*	-.10*
Attributing failure to poor job of teacher	-----	-.16**
Attributing failure to task difficulty	-.20***	-.13** (Sex x ach.)[b]
Attributing success to ease of task	-----	-.15** (Sex x ach.)[b]
Goal Orientation		
Task goal	-.21***	-----
Social solidarity goal	-.11*	-.12* (Sex x ach.)[b]
Ego goal	-----	-.21***

Note:
Gender coded: 1=Male, 0=Female.
[a]The statistics shown are beta weights from multiple regression analysis.
[b]Sex x ach.: Gender by self-perceived academic achievement interaction.
*p < .05. **p < .01. ***p < .001.